

Listing of Claims

Claims 1-25 (canceled)

26. (withdrawn, currently amended) The method of claim 32 wherein the forming of the object ~~includes~~ includes:

producing three-dimensional digital data defining shapes of the crowns of a plurality of the teeth of a patient;

by a jet printing method and in response to the three-dimensional digital data, ~~directly or indirectly~~ forming a custom orthodontic appliance having at least one three-dimensional surface thereof that is configured to matingly conform to at least a portion of the crown of a tooth of the patient.

27. (withdrawn, currently amended) The method of claim 32 wherein the forming of the object ~~includes~~ includes:

forming, by stereo lithography responsive to the three-dimensional digital data, an intermediate object having at least one surface defined by the shape of at least a portion of at least one of the crowns of the teeth of the patient; and

performing a molding process using the intermediate object to form a custom orthodontic appliance having at least one three-dimensional surface thereof that is configured to matingly conform to at least a portion of the crown of a tooth of the patient

28. (withdrawn) The method of claim 27 wherein:

the forming of the intermediate object includes forming the intermediate object having a plurality of surfaces each defined by the shape of at least a portion of a different one of the crowns of the teeth of the patient; and

the performing of the molding process includes forming the appliance having a plurality of three-dimensional surfaces thereof configured to matingly conform each to at least a portion of the crown of a different one of the plurality of the teeth of the patient.

29. (withdrawn) The method of claim 28 wherein:

the forming of the intermediate object includes forming a pattern of a plurality of brackets of the orthodontic appliance and using the pattern to make a mold thereof; and

the performing of the molding process includes investment casting a plurality of orthodontic brackets in the mold, each bracket having a three-dimensional surface thereon configured to matingly conform to at least a portion of the crown of one of the teeth of the patient.

30. (withdrawn) The method of claim 32 wherein the forming of the custom orthodontic appliance by stereo lithography includes directly producing an orthodontic bracket by depositing by stereo lithography material from which the bracket is made in the shape of an orthodontic bracket having at least one three-dimensional surface thereof that is configured to matingly conform to at least a portion of the crown of a tooth of the patient.

Claims 31 (canceled)

32. (currently amended) A method of ~~directly or indirectly~~ manufacturing an orthodontic appliance comprising:

producing digital data defining a ~~three dimensional~~ three-dimensional surface of an orthodontic appliance;

manufacturing the orthodontic appliance based on the digital data by a process that includes depositing material, in accordance with the digital data, layer by layer in a plurality of layers each constituting a ~~two dimensional cross-section~~ two-dimensional cross section of a solid object having an edge defined by data of the ~~three dimensional~~ three-dimensional surface, the layers being stacked in a third dimension to form the solid object having a ~~three dimensional~~ three-dimensional surface defined by the data.

33. (currently amended) ~~The method of claim 32 further comprising:~~

A method of manufacturing an orthodontic appliance comprising:

producing digital data defining a three-dimensional surface of an orthodontic appliance;

manufacturing the orthodontic appliance based on the digital data by a process that includes depositing material, in accordance with the digital data, layer by layer in a plurality of layers each constituting a two-dimensional cross section of a solid object having an edge defined by data of the three-dimensional surface, the layers being stacked in a third dimension to form the solid object having a three-dimensional surface defined by the data;

the solid object having the ~~three-dimensional~~ three-dimensional surface is an orthodontic appliance having a surface defined by the ~~three-dimensional~~ three-dimensional surface of the object.

34. (currently amended) ~~The method of claim 32 further comprising:~~

A method of manufacturing an orthodontic appliance comprising:

producing digital data defining a three-dimensional surface of an orthodontic appliance;

manufacturing the orthodontic appliance based on the digital data by a process that includes depositing material, in accordance with the digital data, layer by layer in a plurality of layers each constituting a two-dimensional cross section of a solid object having an edge defined by data of the three-dimensional surface, the layers being stacked in a third dimension to form the solid object having a three-dimensional surface defined by the data;

using the solid object having the ~~three-dimensional~~ three-dimensional surface to indirectly shape ~~the an~~ orthodontic appliance having a surface defined by the ~~three-dimensional~~ three-dimensional surface of the object.

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35. (currently amended) The method of claim 34 wherein:

the solid object is a pattern having said ~~shape~~ three-dimensional surface and the manufacturing further includes forming a mold with the use of the pattern and casting at least part of the orthodontic appliance with the mold ~~or component thereof therein~~.

36. (currently amended) ~~The method of claim 32 wherein:~~

A method of manufacturing an orthodontic appliance comprising:

producing digital data defining a three-dimensional surface of an orthodontic appliance;

manufacturing the orthodontic appliance based on the digital data by a process that includes depositing material, in accordance with the digital data, layer by layer in a plurality of layers each constituting a two-dimensional cross section of a solid object having an edge defined by data of the three-dimensional surface, the layers being stacked in a third dimension to form the solid object having a three-dimensional surface defined by the data;

the material is selectively formed in each layer of a first portion of material that is removable chemically, thermally or mechanically, and a second portion of material that remains after removal of the first portion to form a solid object the shape of a custom orthodontic appliance or component thereof.

37. (currently amended) The method of claim ~~35~~ 36 wherein:

the material is wax of at least two types, one forming said first portion and one forming said second portion, and the deposition thereof to selectively form the layers includes the selective ~~jet printing~~ depositing of the portions of material in layers to define a cross section of the object with said second portion forming the pattern and being at least partially surrounded by a removable medium formed of said first portion.

Claims 38-52 (canceled)

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53. (new) The method of claim **36** wherein:
the depositing of the material includes selectively jetting the portions of the material layer by layer to produce the two-dimensional cross sections.

54. (new) The method of claim **36** wherein:
the appliance is an orthodontic bracket.

55. (new) The method of claim **36** wherein:
the appliance is a custom orthodontic appliance and the data includes data of the three-dimensional surface of a tooth of an individual patient.

56. (new) The method of claim **33** wherein:
the appliance is an orthodontic bracket.

57. (new) The method of claim **33** wherein:
the appliance is a custom orthodontic appliance and the data includes data of the three-dimensional surface of a tooth of an individual patient.

58. (new) The method of claim **32** wherein:
the appliance is an orthodontic bracket.

59. (new) The method of claim **32** wherein:
the appliance is a custom orthodontic appliance and the data includes data of the three-dimensional surface of a tooth of an individual patient.

60. (new) The method of claim **32** wherein:
the depositing of the material includes jetting material layer by layer to produce the two-dimensional cross sections.

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61. (new) The method of claim **32** wherein:

the manufacturing of the orthodontic appliance is by a stereo-lithographic process that includes depositing a photochemical material, in accordance with the digital data, layer by layer and exposing a plurality of layers to produce the two-dimensional cross sections.

62. (new) The method of claim **61** wherein:

the manufacturing of the orthodontic appliance further includes molding the appliance from the object.